DOCUMENT RESUME

ED 297 072	UD 026 303
AUTHOR	Ingersoll, Gary M.; And Others
TITLE	Impact of Student Mobility on Student Achievement in an Urban Setting.
PUB DATE	Apr 88
NOTE	16p.; Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 1988).
PUB TYPE	Reports - Research/Technical (143) -- Speeches/Conference Papers (150)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*Academic Achievement; *Elementary School Students; Elementary Secondary Education; *Family Mobility; *High School Students; Relocation; *Student Mobility; Urban Problems; *Urban Schools
IDENTIFIERS	Denver Public Schools CO

ABSTRACT

Geographic mobility has a negative effect on a student's overall academic achievement. Data were drawn from Denver (Colorado) Public Schools (DPS), a multiethnic urban schoo.. system of over 60,000 students of whom 58,400 are enrolled in grades K through 12. Each year, students at all grade levels are administered the Iowa Tests of Basic Skills (ITBS) for the elementary grades and the Tests of Academic Progress (TAP) for high school grades. Composite ITBS or TAP scores served as the dependent variable for the analysis. Student mobility was defined by student enrollment patterns in the period from September 1985 through March 1987 when they were tested with the ITBS or TAP for the 1986-87 academic year. Three groups of continuing students and two groups of newly entered students were analyzed. Findings include the following: (1) the percentage of students classified as mobile decreases as grade level increases; (2) achievement levels of the more stable groups were consistently higher than those of students in the more mobile groups; and (3) attempts to control for student socioeconomic status did not alter the correlation between mobility and achievement. While economic and socio-cultural forces impel high mobility and instability among various groups, school administrators might discourage moves of a relatively small distance that place a child in a new assignment area. A list of references, five statistical tables, and two graphs are included. (FMW)

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8-4-88

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IMPACT OF STUDENT MOBILITY ON

STUDENT ACHIEVEMENT IN AN URBAN SETTING

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Running Head: Student Mobility and Achievement

UD026303

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IMPACT OF STUDENT MOBILITY ON STUDENT ACHIEVEMENT IN AN URBAN SETTING

A continuing dilemma for urban school administrators remains the impact of itinerant populations on planning and evaluation. Each year, 17 percent of school aged children and youths move (Bureau of Census, 1986), of these, the majority move within the same county. Of special concern to site-based administrators is the sense that if evaluation is to be based on net achievement of students within a given school building, buildings with disproportionate numbers of itinerant students will be unfairly jeopardized. Mobility is, at the same time, a concern of parents (Barrett & Noble, 1973; Packard, 1972). Parents are prone to delay moves until the summer months to avoid changing their children's schools midyear. Enrollment of the first child in school serves as an impediment to geographic mobility (Long, 1972). There is additional concern that shifts from school to school are stressful to children and youths and negatively affect psychosocial adjustment (see, Coddington, 1972; Johnston, 1986; Simmons & Blyth, 1987).

Actual studies of student mobility on subsequent achievement, however, seem scarce. In their review, Barrett and Noble (1973) found a surprising lack of compelling data relating mobility to children's performance. A limited number of available studies indicate generalized decrement in overall achievement (Blane, Pilling, & Fogelman, 1985; Benson, Haycraft, Stayaert, & Weigel, 1979; Benson & Weigel, 1981). Within a highly mobile population of military children, however, no evidence of mobility was found (Marchant & Medway, 1987), the degree to which these data generalize to other highly mobile polulations is not clear. In data drawn from the same population as the present study, Hammons (1988) found probability of school discontinuance increased with the number of moves. Hence, even at age 15 some bias may enter the data source, especially in urban settings.

Morris, Pestaner and Nelson (1967) found mixed effects of mobility on reading and math achievement. Morris et al. did offer the interesting speculation that mobility may be beneficial for the more intelligent student. Whalen and Fried (1973) later tried to identify highly mobile children who could be differentiated by socioeconomic status and intelligence. Their results indicated that mobility may exacerbate already existing differences among students. More intelligent students may benefit, less intelligent students may be harmed. Whalen and Fried's analysis was likely contaminated by disproportionality of subsample sizes.

In a census data study of age-grade correspondence among students who had or had not experienced interstate migration, Long (1975) found no clear effect. Indeed, Long found some evidence that when controlled for income and parental education, those students who experienced interstate moves were less likely

to be below grade level. Long found an increased likelihood of below expected grade level assignment among children whose parents had not attended college. It would appear from these data, at least, that interstate moves are more likely among those with more education.

Straits (1987), using data from the 1967 Survey of Economic Opportunity, found adverse effects of migration restricted to children of parents with limited education. Straits' study was. however, limited to only students ages 15 and 16 who had moved more than 50 miles. While Straits justified the selection process on the basis of inherent difficulties in cohort comparisons, the study lacks generality. Further, the restriction to moves in excess of 50 miles may eliminate the majority of geographically mobile students. Finally, like Long (1975), Straits used age-grade correspondence as the dependent variable defining achievement. At best, age-grade correspondence is a marginal index of general achievement.

Student mobility in an urban school setting can take a variety of forms. First, selected students are highly mobile within the geographic confines of the system. The result of this intrasystemic mobility is that a student may require one or more transfers am ng school sites. Second, selected students are mobile in a broader context. That is, a student may exit the system and move to another area only to return at a later date. Thirdly, each year brings an influx of new registrants some of whom enter at the start of the academic year others of whom enter midyear. Mobility occurs both within and external to a school district. The purpose of this study is to assess the impact of student mobility on overall achievement patterns.

DATA SOURCE

Data for this study were drawn from the student data base of the Denver (CO) Public Schools (DPS). DPS is a multiethnic urban school system of over 60,000 students of whom 58,400 are enrolled in grades K through 12. Each year, students at all grade levels are administered the Iowa Tests of Basic Skills (ITBS) for the elementary grades and the Tests of Academic Progress (TAP) for high school grades. Composite ITBS or TAP scores served as the dependent variable for these analyses. Student mobility (or stability) was defined by student enrollment patterns in the period from September, 1985 through March, 1987 when they were tested with the ITBS or TAP for the 1986-87 academic year. Five student groups were identified for analyses; three of the groups were continuing students and two of the groups were entries during the (1986-87) academic year.

Group 1 continuing students were identified as those who were on the DPS census as of Fall 1985 and who neither requested a between school transfer nor withdrew from and reentered the DPS system within the period under study.

Group 2 continuing students were identified as those who were on the DPS census as of Fall 1985 and who made no more than one request for a between school transfer or they withdrew from and reentered the DPS system within the period under study no more than once.

Group 3 continuing students were identified as those who were on the DPS census as of Fall 1985 or who entered during that year after the official census or who made more than one request for a between school transfer or they withdrew from and reentered the DPS system within the period under study more than once.

Group 4 new-entry students were identified as those who were on the DPS census as of Fall 1986 and who made did not request a between school transfer and did not withdraw from and reenter the DPS system within the period under study.

Group 5 new-entry students were identified as those who were not on the DPS census as of Fall 1986 or who were newly registered as of Fall, 1986 but made one or more between school transfers or they withdrew from and reentered the DPS system within the period under study.

RESULTS

A summary of the distribution (by percent of cases) of students within mobility groups across grade levels is presented as Table 1. It may be noted in that the percent of students that are classified as mobile diminishes as grade level increases. At grade 1, the three most unstable groups (2, 3, and 5) accounted for 32.5 percent of the population. By grade 12, the proportion falling into these three groups diminished to 7.9 percent.

Analyses of mean composite achievement scores at each grade level revealed highly statistically significant differences in composite achievement among the five groups ($p < .001$, see Table 2). Achievement levels of the more stable student populations (Groups 1 and 4) were consistently higher than those of the mobile student populations (Groups 2, 3 and 5). When those results are displayed as Figure 1, it is tempting to conclude that the negative impact of mobility on achievement increases over grade levels. However, when F-Ratios in Table 2 are reviewed, the impact of mobility appears to diminish as grade level increases. This conclusion is further supported by an assessment of effect sizes using weighted pairwise comparisons. Table 3 presents effect size comparisons of Groups 2 through 5 with Group 1. In viewing the effects on membership in Groups 2 and 3 (see Figure 2), the largest effect sizes are found in the early grades, although some continued detriment is noted well into Grade 9 for Group 2. The reason for the differential view of source of primary effects may be linked to the size of the error variance term. In early grades, variance is small so any deviation is notable. Later, especially during the high school

years, intra-individual variability in achievement is wide and effect sizes are thus small. An alternative, less statistically rigorous comparison may be seen in Table 4. In Table 4, the group deviations from Group 1 are defined in unweighted standard deviation units.

The effects of membership in Groups 4 and 5 are less stable. In all instances membership in Group 5 is a detriment. In some instances, membership in Group 4 is an advantage. At Grades 4, 7, and 9 DPS receives an influx of private school, it appears these new students are academically homogeneous and at least performing at grade level.

Since ample evidence is available to posit a potential contaminating effect of socioeconomic status on the impact of geographic mobility, the analyses were repeated using analysis of covariance with an estimate of student socioeconomic status (SES) as the covariate. A direct measure of student SES (such as the Hollingshead index) was unavailable. An estimate of student SES was gleaned by assigning each student the probability of a family living in poverty within the census area of his/her home. Percent of variance in Composite Achievement scores ranged from 11.5 percent to 18.5 percent depending upon the grade. On the whole the impact of the SES variable increased across grade levels. The results of the ANCOVA analyses are presented in Table 3. While SES clearly mitigated the results of geographic mobility to an extent, the effects remained stable in the presence of the covariate.

Analyses of Reading and Mathematics Achievement scores among the five groups parallelled those for Composite achievement. Of interest, however, was the observation that in 11 of 12 grades the effect of mobility was stronger in Math than in Reading. Further analyses of the 1987 achievement scores regressed on 1986 achievement for the three groups of continuers augments that latter finding in demonstrating that between year gains may reflect a cumulative disadvantage.

DISCUSSION

The data presented in the present study offer compelling evidence that geographic mobility is an aversive influence on student achievement. These aversive effects are most notable in the more unstable populations and persist even under attempts to control for socioeconomic status. As such the data conform to other analyses which indicate mobility has a disruptive effect on achievement and adjustment.

Long (1972; 1975) hypothesizes that moves cause disruption in the smooth flow of friends, teachers, curricula, and social support systems. His hypothesis conforms with other recent assessments of the impact of stressful life events on children and adolescents. The potential negative impact of mobility has

motivated some (e. g., Beem & Prah, 1984; Smardo, 1981) to advocate inclusion of orientation and welcome sessions for the new student.

Schaller (1976) and Blane (Blane, Pilling, & Fogelman, 1985; Lacey & Blane, 1979) warn, however, against making too general an assumption that mobility is a causal contributor to achievement. In reality mobility effects may be solely a function of contamination of pre-existing differences including socioeconomic status or they may be reflective of other effects related to disruption of smooth psychosocial development

Schaller's (1976) and Blane's (Blane, et al., 1985) warning are not completely lost in these present data. While attempts were made to partial out the contaminating effects of socioeconomic status, the measures were admittedly less than perfect. Nonetheless, the stability of the differences among the studied groups in the presence of those controls does suggest a powerful effect of concern.

The degree to which the changing proportionality of stabile and mobile populations over grade levels affects the interpretability of these data is unclear. Certainly the measures of effect size are affected to some degree and consequently the generality of these findings may be questioned because of that. It is, however, our intent to replicate these data within the current year's testing.

It is unlikely that a site-based or central administrator has the authority or capability to completely thwart the highly mobile behaviors of segments of urban school populations. In part, such mobility results from forces outside the province of schools. Economic and socio-cultural forces impel high mobility and instability among various groups. On the other hand, some elements of intrasystemic mobility may be discouraged. In many cases, intrasystemic mobility may occur as a result of a move of relatively small distances which place a child in a new assignment boundary. Further, the positive value of stability on children's achievement is a message that may be conveyed to parents.

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TABLE 1

Sample Distribution (Percent of Cases)

of Students in Mobility Groups by Grade Level

	GROUP				
GRADE	GROUP 1	GROUP 2	GROUP 3	GROUP 4	GROUP 5
1	62.3	13.8	5.2	12.7	6.0
2	69.3	12.7	5.1	8.3	4.6
3	70.2	11.6	4.6	7.8	4.8
4	71.3	12.9	3.8	8.0	4.0
5	71.9	12.2	3.9	7.0	4.9
6	74.2	12.1	5.3	6.6	3.8
7	75.2	10.1	2.6	7.9	4.2
8	76.6	10.2	2.6	6.7	3.9
9	72.4	9.0	2.0	12.4	4.2
10	78.1	7.2	2.8	8.2	3.7
11	83.7	6.0	1.6	6.1	2.7
12	87.4	5.4	1.1	4.7	1.4

TABLE 2

Mean Composite Grade Level Equivalent Achievement of Students in Mobility Groups by Grade Level

	GROUP					
GRADE	GROUP 1	GROUP 2	GROUP 3	GROUP 4	GROUP 5	F-RATIO**
1	1.9	1.7	1.5	2.0	1.6	40.38
2	3.0	2.6	2.4	3.0	2.7	25.27
3	3.7	3.4	3.2	3.7	3.5	18.00
4	4.6	4.1	4.1	4.9	4.4	34.04
5	5.6	5.2	4.9	5.7	5.4	19.30
6	6.6	6.0	5.8	6.5	6.3	21.66
7	7.5	6.9	6.9	7.6	7.0	19.01
8	8.4	7.8	7.3	8.3	7.8	19.75
9*	9.3	8.2	7.7	10.3	8.6	31.98
10*	11.1	10.0	9.3	11.8	10.0	15.66
11*	12.4	10.7	9.9	12.0	10.3	13.67
12*	13.3	11.4	10.4	13.0	10.1	9.82

* For grades 9 to 12, mean TAP standard scores were transformed to Grade Equivalents solely for purposes of comparison.

** All F-Ratios have a probability of less than .001

TABLE 3

Effect Sizes of Mobility Groups Mean Performance

Compared to Group 1 Students' Performance by Grade Level

	GROUP				
GRADE	GROUP 2	GROUP 3	GROUP 4	GROUP 5	F-RATIO
1	-7.58	-8.00	+2.42	-6.17	40.38
2	-9.50	-7.58	-0.38	-2.32	25.27
3	-5.85	-6.35	+0.33	-1.98	18.00
4	-9.11	-5.92	+3.62	-2.63	34.04
5	-5.97	-6.81	+0.23	-2.28	19.30
6	-7.84	-5.56	-1.03	-2.62	21.66
7	-5.59	-5.79	+1.48	-3.36	19.01
8	-6.90	-5.46	-1.1[illegible]	-4.08	19.75
9	-7.30	-5.15	+5.54	-2.90	31.98
10	-4.89	-5.01	+2.27	-3.40	15.66
11	-4.68	-4.12	-1.18	-4.37	13.67
12	-3.99	-3.13	-0.49	-3.84	9.82

** All F-Ratios have probability levels less than .001

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TABLE 4

Standard Deviation Differences

of Mobility Groups Mean Performance

Compared to Group 1 Students' Performance by Grade Level

	GROUP			
GRADE	GROUP 2	GROUP 3	GROUP 4	GROUP 5
1	-.34	-.55	+.11	-.40
2	-.45	-.56	-.02	-.18
3	-.31	-.53	-.02	-.16
4	-.45	-.51	+.22	-.22
5	-.31	-.59	-.02	-.18
6	-.41	-.53	-.07	-.23
7	-.33	-.68	-.10	-.31
8	-.40	-.65	-.08	-.37
9	-.44	-.63	+.29	-.25
10	-.34	-.55	-.15	-.33
11	-.37	-.62	-.09	-.51
12	-.39	-.64	-.03	-.71

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TABLE 5

Effect Sizes of Mobility Groups Mean Performance

Compared to Group 1 Students' Performance by Grade Level

(Controlled for Socioeconomic Status)

	GROUP				
GRADE	GROUP 2	GROUP 3	GROUP 4	GROUP 5	F-RATIO
1	-6.25	-6.38	+0.31	-6.89	28.28
2	-8.29	-6.29	-1.22	-3.75	25.27
3	-5.00	-5.12	-0.85	-2.53	12.19
4	-8.11	-4.24	+1.54	-3.37	24.09
5	-6.61	-5.29	-1.87	-3.42	12.78
6	-6.91	-4.32	-1.78	-3.42	16.70
7	-4.24	-5.15	-1.29	-4.51	14.39
8	-6.52	-4.55	-2.64	-4.90	19.08
9	-6.44	-4.18	+0.91	-4.22	18.44
10	-4.18	-3.92	-0.08	-3.59	10.19
11	-3.86	-3.24	-2.62	-4.05	10.26
12	-3.77	-2.62	-1.36	-3.61	8.36

** All F-Ratios have probability levels less than .001

FIGURE 1

Mean Composite Grade Level Equivalent Achievement

of Students in Mobility Groups by Grade Level

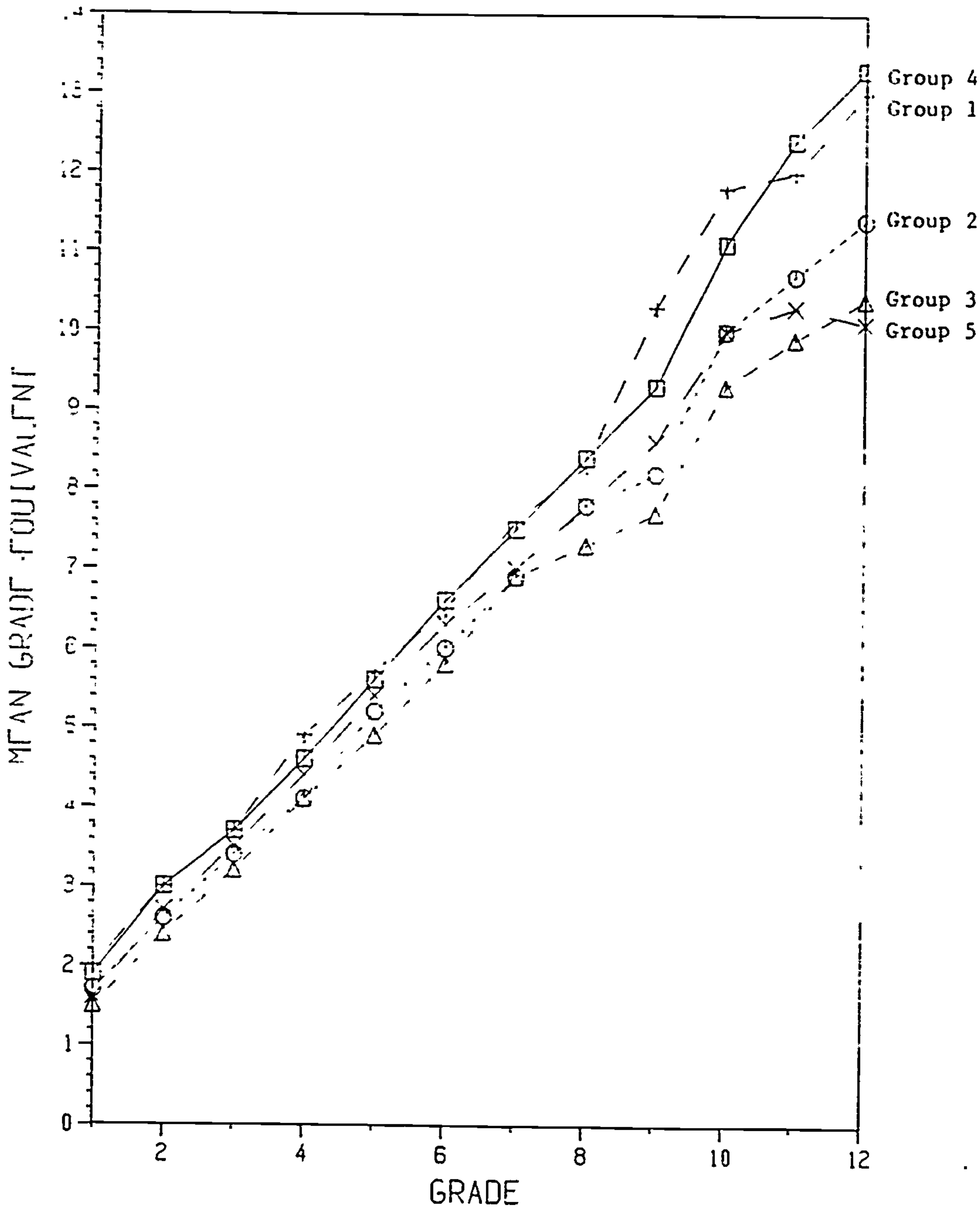

FIGURE 2

Mean Achievement Effect Sizes (Compared to Group 1)

of Students in Mobility Groups by Grade Level